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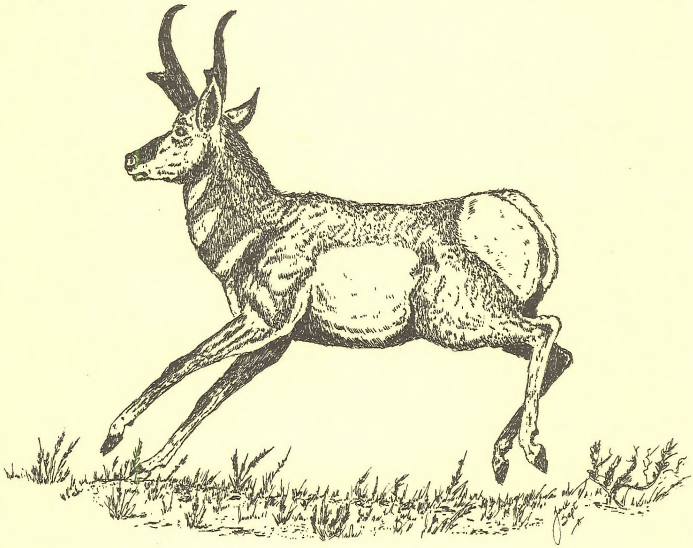
WILDLIFE OF PRAIRIE COUNTY TERRY STUDY AREA



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ABSTRACT

The Bureau of Land Management (BLM) recently conducted and completed a wildlife inventory on a 258 square mile tract in Wibaux County, Montana and Golden Valley, North Dakota. This information was necessary for BLM to make a responsible decision regarding possible coal leasing in this area. As part of the Wibaux-Beach project, BLM later collected additional wildlife information on four study sites within the surrounding area to determine whether the wildlife data was consistent and extrapolative for planning purposes. If so, this would save many hours of field work collecting specific wildlife information.

Four study sites were initially selected for comparison purposes. All the areas lie within the Shortgrass Prairie Province as outlined by Bailey (1978). This report covers only data obtained for the Terry study area (Prairie County).

Data was collected on the occurrence, relative abundance, distribution, and habitat relationships of the wildlife species in Prairie County. A total of 4,000 trap nights in four different vegetation types were expended on small mammal trap effort for the spring, summer, and fall seasons. Incidental observations of wildlife were recorded while working in Prairie County. Plus a route survey, 50 stops in length, was established and run late-May. Approximately 1,100 observations were made on three species of amphibians, four species of reptiles, 89 species

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of birds, and 19 species of mammals. In addition, all known wildlife information from other sources such as annual harvest and research reports from Montana Department of Fish, Wildlife, and Parks was obtained and consolidated into this report for upcoming Unit Resource Analysis (URA) updates.

Most of the amphibians and reptiles were relatively common, except the western hognose snake. The majority of the data on game species consisted of annual harvest and population statistics that was obtained from Montana Department of Fish, Wildlife, and Parks. A total of 13 known and 23 probable sage grouse and sharptail grouse strutting grounds were identified. Horned larks, western meadowlarks, and mourning doves were the dominant nongame birds. A total of 402 small mammals/other vertebrate species were trapped in four vegative types. The deer mouse was the dominant small mammal.

ACKNOWLEDGEMENTS

This study was funded by the U.S. Bureau of Land Management (BLM) and conducted by BLM personnel from the Miles City District Office in Miles City, Montana. We would like to express our gratitude to the many people who assisted us in this study. Many landowners allowed us access to their land and provided information about wildlife on their land. Doctor R.E. Moore and Mr. Ray Hays verified the identifications of some small mammals, and prepared and stored these voucher specimens in the Montana State University Zoological Museum. Montana Department of Fish, Wildlife, and Parks personnel of Region 7 in Miles City were very helpful in providing information. Special appreciation is due to Jon Swenson, Neil Martin, Arnold Dood, Harold Wentland, and Keith Seaburg for their assistance. Also, we would like to thank the BLM personnel who assisted in this project.

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INTRODUCTION

Background

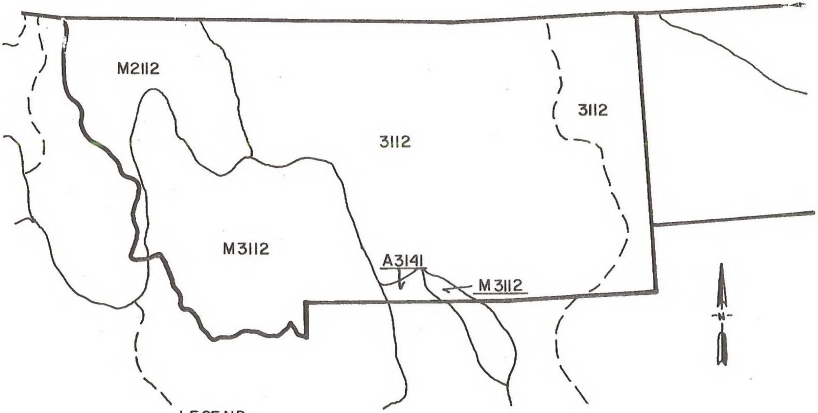
The Bureau of Land Management (BLM) is mandated with the responsibility of managing the surface and/or subsurface resource values (i.e., range, wildlife, watershed, soil, minerals, etcetera) on BLM-administered public lands, plus BLM, in concert with other federal agencies (i.e., U.S.G.S., O.S.M., etc.), is responsible for management of other federal mineral estates. As a federal land management agency, BLM has to make increasingly complex and oftentimes controversial decisions with regard to the best use or combination of uses of these public lands. In order to make the best possible decision regarding these public lands, much resource information and public input is needed.

Within southeastern Montana, there has been an increased interest in possible leasing of federal minerals; however, there is little information available for these areas on the surface resource values. One such area is the Wibaux-Beach Known Recoverable Coal Resource Area (KRCRA). Because of possible coal leasing interests and the relative lack of wildlife information in this area, BLM initiated and recently completed an extensive wildlife inventory of this area (see Matthews, 1979, and Munson, 1979).

The Wibaux-Beach study area, a 258 square mile tract along the Montana and North Dakota borders lies within the boundaries of the Great Plains

Shortgrass Prairie Province - "Wheatgrass - Needlegrass Section" as outlined by Bailey (1978); however, this area encompasses 102,800 square miles, in Montana and North Dakota, with the Wibaux-Beach study area lying on the midwestern portion of the area (Figure 1). Since BLM needed wildlife information on public lands throughout the entire Shortgrass Prairie Province for planning purposes, BLM personnel in Miles City decided to select several additional study areas within the Shortgrass Prairie to collect wildlife information. This data can then be compared to the Wibaux-Beach wildlife data to determine whether the data was comparable for planning on a broad perspective within the Shortgrass Prairie Province. If so, this would save many hours in the field trying to collect specific wildlife information within this area.

Four study areas (Sidney, Glendive, Baker, and Terry) were initially selected for comparison purposes to the Wibaux-Beach study. The study areas were selected in three different BLM Planning Units but all lie within the Shortgrass Prairie Province. The first three study areas are in the "Wheatgrass - Needlegrass Section"; while, the Terry study area is in the "Grama - Needlegrass - Wheatgrass Section," some 20-30 miles distant. This report covers only the Terry study area. Data collection on the other study sites will be completed early in the spring of 1980 with a separate report on each study area to follow shortly thereafter.



LEGEND

GREAT PLAINS SHORT-GRASS PRAIRIE

3111- Grama, Needlegrass, Wheatgrass

3112- Needlegrass, Wheatgrass

WYOMING BASIN

A3141- Needlegrass, Wheatgrass, Sagebrush

COLUMBIA FOREST

M2112- Cedar-Hemlock-Douglas-Fir Forest

ROCKY MOUNTAIN FOREST

M3112- Douglas-Fir Forest

Figure 1. ECOREGIONS IN MONTANA

The objectives of the study were to gather as much wildlife information as possible on the respective study sites for comparison to the Wibaux-Beach wildlife data. It was decided to spend one week each season (fall, spring, and summer) collecting data on the study site. In addition, all known wildlife information for these areas from various sources would be collected and consolidated into these reports.

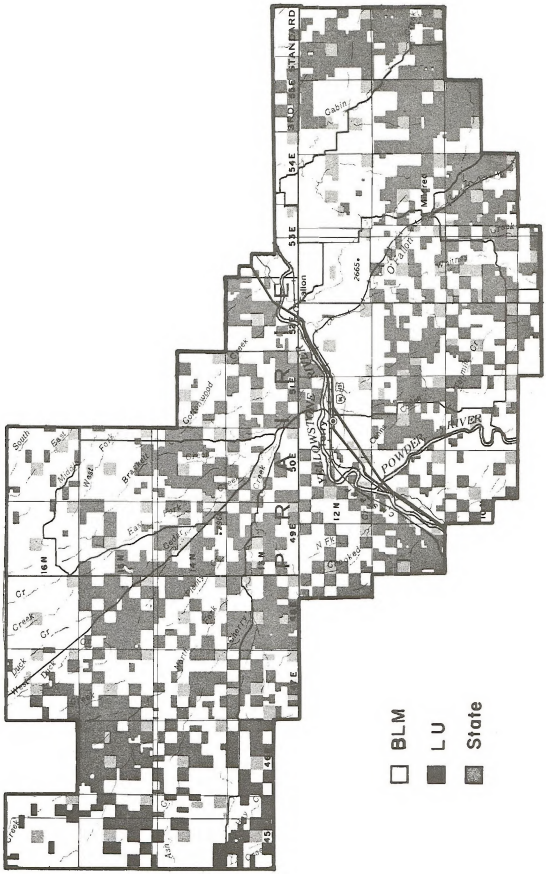
Description of Study Area

The Terry study area lies within the Prairie Planning Unit (Prairie County)[Figure 2]. Most of the data were collected near Coal Creek Reservoir, just north of the town of Terry; however, a portion of the survey route extended south of the town of Terry.

The area is in a semi-arid region and receives 10-20 inches of precipitation annually. Temperature extremes vary considerably. January is the coldest month with an average minimum and maximum temperatures of -0.56°F and 24.55°F, respectively; while, July is the warmest month with an average minimum and maximum temperature of 56.29°F and 87.27°F, respectively (Ross, 1978).

The elevation in the Prairie Planning Unit ranges from a high of 3,625 feet to a low of 2,115 feet (Davis, 1979). Most of the planning unit is rolling prairie land dotted with some scoria buttes through the area and badlands along the Yellowstone River.

The vegetation type in the planning unit is mostly grassland. Although several different grasslands were delineated in the Unit Resource Analysis (URA) for the Prairie Planning Unit, grasslands were lumped and considered as one unit for this study. Four vegetative types similar to four vegetative types used for the Wibaux study were sampled for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Creek
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Creek
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South
East
Fork
West
Fork
Big
Dry
Creek
Cr.
Cr.
Cr.

small mammal occurrence. On the route survey and incidental observations, species were recorded according to the predominant vegetation (e.g. grassland, cultivated farm lands, sagebrush, etc.) that they were observed in.

METHODS

Several different techniques were utilized for data collection of the wildlife species on the study area. All wildlife species that were observed during the study periods were recorded by numbers of individuals, habitat type, and location (township, range, and section number or stop number on route surveys).

Small mammals were trapped each season, except winter, in four vegetation types similar to the Wibaux Beach trap sites. The traplines consisted of 25 stations with four traps per station in the same pattern as described by Matthews (1979). Traplines were set and checked daily for three successive nights in each vegetation type, except for the summer trap period when four successive nights were trapped. All small mammals that were captured were identified and other data were recorded. Questionable and unusual specimens were sent to the Montana State University Zoological Museum for verification and storage. Incidental observations of all wildlife species or sign that was observed while on the study area were recorded. In addition, a route survey 50 stops in length with stops spaced one-half mile apart was established and run during late May. The route survey was patterned after Robbins and Van Velzen's Breeding Bird Survey (1967), but the original technique was modified for this study. Instead of recording just birds, all wildlife species (snakes, deer, etc.) that were seen along the route were recorded at the respective stops.

In addition, data on game species were obtained from the Montana Department of Fish, Wildlife and Parks and other sources and incorporated into this report. This was done to consolidate all known wildlife information for this area for upcoming URA updates and to give some insight into the overall wildlife community there.

RESULTS AND DISCUSSION

Most of the data on game species were obtained from the Montana Department of Fish, Widlife, and Parks. These data consisted of harvest, hunter, and some population statistics. BLM's Prairie Planning Unit consists of four major hunting units in Region 7. These hunting units are 730,731,760 and a small portion of 761 for deer; and hunting unit 714 for antelope (same as deer unit 730). At present, BLM has contracted with the Montana Department of Fish, Wildlife, and Parks to do a nongame wildlife study in the Terry Badlands. BLM will do a separate game species report for the Terry Badlands project after completion of the entire study. Therefore, game species data on the Terry Badlands area were excluded from this report and will be incorporated into a separate game species report in late FY 80 or in early FY 81.

Mule Deer

Only eight observations of mule deer were obtained during this study. These data were insufficient to form any opinions about the mule deer in the Prairie Planning Unit; however, some data were obtained from Montana Fish, Wildlife, and Parks annual reports on Big Game Surveys and Inventory - Region 7 and Job Progress Reports from a study in Prairie and McCone Counties by Hamlin in 1976, 1977, and 1978.

Data on preseason and postseason mule deer production are presented in Appendix Tables A and B. During preseason, 196 mule deer were classified in the four hunting districts. Bucks represented approximately 9 percent of the sample, whereas, does and fawns represented 48 percent and 43 percent, respectively. Postseason results were similar in composition, except bucks and does were classified as adults since both sexes are antlerless at this time. Hamlin (1976, 1977, and 1978) found similar but somewhat lower results for his study in McCone and Prairie Counties. His data on mule deer are presented in Appendix Tables C,D, and E. Also, he worked out population estimates on his study area (Appendix Table F). The values varied from a low of 153 mule deer that were observed in 1976 to a high of 394 mule deer in 1978. Calculated values varied from 180-394 mule deer. Harvest statistics for 1978 are presented in Appendix Table G.

Although critical summer and wintering ranges have not been identified in the Prairie Planning Unit, Hamlin (1978) has worked out habitat utilization by mule deer in his study (Appendix Table H). During September-October, mule deer utilized green ash, sage-snowberry-rose, and deciduous shrub for most of the observations in about equal proportions. During December-January, these areas were hardly utilized and rough breaks and horizontal juniper-grass utilization increased to 71 and 16 percent, respectively. By March-April, rough break utilization dropped to only 28 percent and grassland utilization was 37 percent. In addition, Hamlin (1978 did some work on browse utilization

in the area (Appendix Table J). Rubber rabbitbrush (Chrysothamnus nauseous) was the most heavily used browse plant in 1976-1977.

White-tailed Deer

Only one observation of white-tailed deer was obtained during this study. As with mule deer, most of the data on white-tailed deer were obtained from Montana Fish, Wildlife, and Parks Annual Reports.

Data on preseason and postseason production were not available for all the hunting units in the Prairie Planning Unit; however, all the available data on these units is presented in Appendix Tables K and L. Also, Hamlin (1978) presented white-tailed deer population statistics for his study in McCone and Prairie Counties (Appendix Table C,D, and E). His counts ranged from a low of 74 white-tailed deer in September 1976 to a high of 233 in April 1977. For the most part, both preseason and postseason classifications resulted in 37-44 percent fawns in the population. This was about the same as mule deer classifications in this area. Harvest statistics are presented in Appendix Table G.

The only data in this area on habitat utilization and foods are Hamlin's study are are presented in Appendix Tables I and J. As expected, whitetails used deciduous shrub and green ash in September-October; however, habitat utilization of these areas decreased December-January and agriculture and horizontal juniper-grass use increased. In March-April.

deciduous shrubs were again heavily used and agriculture utilization remained about the same. Chokecherry (*Prunus virginiana*), snowberry (*Symphorocarpos spp.*), and rose (*Rosa* spp.) were the most heavily browsed plants.

Antelope

Fifteen observations of 209 antelope were made during the study (Table 1). All the observations were made in grassland, except one observation in cultivated croplands. The number of individuals ranged from one to greater than 100 antelope in a herd.

The only other population information that is available is annual production and harvest data obtained from Montana Fish, Wildlife, and Parks annual reports and is presented in Appendix Tables M and N. From this, the average density per square mile ranged from a low density of 0.5 antelope in hunting units 761 in 1965 and 760 in 1968 to a high density of 2.0 antelope in hunting unit 731 in 1964. The density for 1978 was 0.8 and 0.9 antelope in hunting units 731 and 714, respectively. For 1978, the percent success varied from 52 percent in hunting unit 731 to 74 percent in hunting unit 714. In addition, antelope summer distribution and areas occupied in the respective hunting units is presented in Appendix Figures O and P and Appendix Table Q.

Game Birds

Other than a few scattered observations of game birds, very little information was available on these species in the Prairie Planning Unit. Montana Department of Fish, Wildlife, and Parks has annual harvest and population statistics data for Region 7; however, most of these data are regionwide, rather than broken down into specific hunting units. There is an annual sage grouse survey along Cherry Creek. Since 1974, when 96

Table 1. Antelope Observations within Prairie County (1978-1979).

Date	Males	Females	Young	Total	Vegetation Type
6-78	1	3		4	Grassland
6-78		2		2	
6-78	4			4	
8-78		1	3	4	
10-78	2	X	X	14	Cultivated Cropland
11-78				100	Grassland
11-78				35	
12-78				9	
4-79		X	X	7	
5-79	1	8		9	
5-79	1	8		9	
5-79	1			1	
5-79	1	2		3	
5-79				1	
7-79				7	
15 observations				209 antelope	

1 Some observations obtained from BLM Wildlife Observation Files.

male sage grouse were observed on four strutting grounds, there has been a gradual decline in male sage grouse attendance to 1979 when only 28 sage grouse were observed on three strutting grounds (Montana Department of Fish, Wildlife, and Parks Upland Game Bird Surveys and Inventory-Region 7-1979). Locations of known and probable sage/sharptail grouse strutting grounds within Prairie County are presented in Tables 2 and 3. Probable strutting grounds were obtained from 1974 BLM wildlife data files and landowner consultation. Locations of these strutting grounds will be verified spring FY 80 by BLM biologists.

Raptors

At present, there are portions of three raptor survey routes extending through Prairie County. The U.S. Fish and Wildlife Service (1976) listed estimates of 11.0-13.9 golden eagles per 100 square miles with estimates of 41.8-51.7 immatures for a 12,500 square mile tract extending through Prairie County. Hinz (unpub. data, 1979) counted 119 bald eagles in 30 flights in a stretch of the Yellowstone River from Kinsey to Fallon from October 1974 - January 1979. In addition, he gave estimates of 1.0-5.1 bald eagles/Km along this stretch of the river. Currently, BLM biologists are cooperating with Montana Department of Fish, Wildlife, and Parks on a raptor survey extending through Prairie County. Results of this survey are presented in Table 4.

Table 2. Known Sage Grouse and Sharptail Grouse Strutting Grounds in Prairie County.
Source: Montana Department of Fish, Wildlife, and Parks - Region 7.

Species	Location
Sage Grouse	T.15 N., R.48 E., S.36 NE¼
	T.14 N., R.45 E., S.10 SW¼
	T.13 N., R.49 E., S.4 SW¼
	T.13 N., R.49 E., S.14 NE¼
	T.13 N., R.49 E., S.13 SE¼
	T.12 N., R.51 E., S.6 SW¼
	T.11 N., R.50 E., S.6[1]
	T.10 N., R.48 E., S.14[1]
Sharptail Grouse	T.16 N., R.47 E., S.20 NE¼
	T.15 N., R.48 E., S.30 NW¼
	T.15 N., R.47 E., S.32 SE¼
	T.15 N., R.47 E., S.12 SW¼
	T.15 N., R.46 E., S.36 SE¼

[1]Source: W.L. Matthews - unpublished data.

Table 3. Probable Sage Grouse and Sharptail Grouse Strutting Grounds in Prairie County.
Source: Various Landowner Consultation and BLM Wildlife Observation Files.

Species	Location
Sage Grouse	T.14 N., R.45 E., S.4
	T.14 N., R.45 E., S.10 NW¼
	T.14 N., R.45 E., S.26
	T.14 N., R.45 E., S.32
	T.13 N., R.45 E., S.3
	T.13 N., R.45 E., S.5
	T.13 N., R.47 E., S.1
	T.13 N., R.47 E., S.23
	T.13 N., R.48 E., S.34
	T.13 N., R.49 E., S.23
	T.12 N., R.49 E., S.2
	T.12 N., R.49 E., S.29 SE¼
	T.12 N., R.49 E., S.31 E½
	T.12 N., R.51 E., S.4
	T.11 N., R.47 E., S.24
	T.10 N., R.48 E., S.1
Sharptail Grouse	T.16 N., R.50 E., S.30
	T.14 N., R.45 E., S.34 NE¼
	T.14 N., R.45 E., S.34 NW¼
	T.14 N., R.45 E., S.27
	T.13 N., R.45 E., S.17
	T.13 N., R.47 E., S.20
	T.13 N., R.48 E., S.8
	T.13 N., R.48 E., S.18
	T.13 N., R.49 E., S.8
	T.13 N., R.49 E., S.22

Table 4. Powder River Raptor Survey Route (1977-1979).
Source: Montana Department of Fish, Wildlife, and Parks Raptor Survey.

Date	Total Raptors (Species Composition)
6-04-77	7 (2 Red-tailed Hawks - 5 Kestrels)
1-05-78	1 (1 Prairie Falcon)
5-26-78	22 (4 Red-tailed Hawks - 17 Kestrels - 1 Red-shouldered Hawk)
1-19-79	0
5-11-79	15 (2 Red-tailed Hawks - 2 Swainson's Hawks - 2 Marsh Hawks - 9 Kestrels)

Waterfowl and Colonial Nesters

Waterfowl that were observed on Coal Creek Reservoir and a 15-16 mile float trip on Yellowstone River from Benz to Terry, Montana are presented in Table 6. One island on the Yellowstone River that was searched for Canada goose nests had four nests with 5,6,7, and 8 eggs in them.

Although there are many double-crested cormorants and white pelicans along this stretch of the Yellowstone River, there are no known rookeries for either species in the area. Large numbers of non-breeding white pelicans were often observed at the mouth of the Powder River.

Furbearers and Predators

The only information on furbearers and predators obtained during this study was five observations of coyotes, two observations of beavers and muskrats, and one observation of a red fox. Most of the coyote observations were in grassland; the beaver observations were on the Yellowstone River, and the fox and muskrats were seen around Coal Creek Reservoir.

In 1977, the Montana Department of Livestock reported that four coyotes in Prairie County were taken by predator control work. Annual harvest data on furbearers and predators is available from Montana Department of Fish, Wildlife, and Parks but it is only tabulated for the entire Region 7.

Nongame

Herpetiles

Seven species of herpetiles were identified on the study area (Table 5). All the observations were incidental observations while working. Three species were amphibians: Rocky Mountain toad, northern chorus frog, and leopard frog. These species are all rather common for this area. All the amphibians were seen around Coal Creek Reservoir.

Four species of snakes were seen on the study area. Three species, i.e., racer, bull snake, and plains garter snake, are rather common for the area; however, the other snake, the plains hognose snake, is a "special interest and concern" reptile for Montana. Two hognose snakes were seen during this study. One was captured while it was crossing a road and the other one was a road-kill. The habitat type on both sides of the road was grassland with a sandy-type soil in both cases. The other three species of snakes were seen in grassland in most cases, except for the plains garter snake which was often seen around Coal Creek Reservoir.

Table 5. Amphibians and Reptiles Identified on the Study Area.

SPECIES	SIGHTINGS BY HABITAT[1]	TOTAL SIGHTING
Rocky Mountain Toad *Bufo woodhousei*	2(4) Res 1(1) BB	3(5)
Northern Chorus Frog *Pseudacris triseriata*	6(7) Res	6(7)
Leopard Frog *Rana pipiens*	9(21) Res	9(21)
Racer *Coluber constrictor*	1(2) CB 1(1) Gr 1(1) Res	3(4)
Plains Hognose Snake *Heterodon nasicus*	2(2) Gr	2(2)
Gopher (Bull) Snake *Pituophis melanoleucus*	4(4) Gr 2(2) Res	6(6)
Plains Garter Snake *Thamnophis radix*	5(7) Res	5(7)

1. Numbers are total number of sightings (total number of individuals sighted).

Res - Reservoir
BB - Badlands Bluffs
CB - Creek Bottom
Gr - Grassland

Birds

Eighty-nine species of birds were identified. This figure included 16 species of waterfowl, 11 species of raptors, and three species of game birds. Data on their status, habitat utilization, and number of sightings are presented in Table 6. Habitat utilization was merely a listing of the habitats that species were observed in. This is not meant to show that these areas were preferred habitats for these species, but, rather that these species were simply observed in these habitats. The reason for this was that the sample size was too small in most cases to show preferred habitat selection.

Waterfowl, raptors, and game birds were discussed in previous sections. The majority of the remaining bird species were passerines or songbirds. Three species (upland sandpiper, field sparrow, and clay-colored sparrow) are "special interest and concern" species for Montana; while, the others are fairly common birds in the area. The western meadowlark, horned lark, mourning dove, and lark bunting were the more common birds species in their respective order of abundance.

Mammals

Nineteen species of mammals were observed during the study (Table 1). Game species, furbearers, and predators were discussed in previous sections. Other than a few observations of cottontails and jackrabbits,

Table 6. Birds Identified on the Study Area.

SPECIES	STATUS[1]	SIGHTINGS BY HABITAT[2]	TOTAL SIGHTINGS
Horned Grebe *Podiceps auritus*	t	1(3) Res	1(3)
Eared Grebe *Podiceps nigricollis*	t	5(48) Res 2(3) YR	7(51)
Western Grebe *Aechmophorus occidentalis*	t	5(8) YR	5(8)
Pied-billed Grebe *Podilymbus podiceps*	B	7(23) Res 1(1) YR	8(24)
White Pelican *Pelecanus erythrorhynchus*	t	19(154) YR 1(5) Res	20(159)
Double-crested Cormorant *Phalacrocorax avritus*	b	18(75) YR	18(75)
Great Blue Heron *Ardea herodias*	B	3(5) YR 1(1) Res	4(6)
Canada Goose *Branta canadensis*	B	17(56) YR 3(17) Res	20(73)
Snow Goose *Chen caerulescens*	t	1(1) YR	1(1)
Mallard *Anas platyrhynchos*	B	14(32) YR 7(42) Res	21(74)
Gadwall *Anas strepera*	b	3(10) Res	3(10)
Pintail *Anas acuta*	b	5(19) Res 1(1)	6(20)
Green-winged Teal *Anas crecca*	b	5(23) Res 3(16) YR	8(39)
Blue-winged Teal *Anas discors*	B	2(18) Res 1(2) YR	3(20)
American Wigeon *Anas americana*	B	2(5) YR 2(3) Res	4(8)
Northern Shoveler *Anas clypeata*	B	2(18) Res 1(3) YR	3(21)

2. Numbers are total number of sightings (total number of individuals sighted).

SPECIES	STATUS[1]	SIGHTINGS BY HABITAT[2]	TOTAL SIGHTINGS
Redhead *Aythya americana*	t	4(11) Res	4(11)
Ring-necked Duck *Aythya collaris*	t	1(12) Res	1(12)
Canvasback *Aythya valisineria*	t	2(4) Res	2(4)
Lesser Scaup *Aythya affinis*	b	2(31) Res 1(1) YR	3(32)
Common Goldeneye *Bucephala albeola*	t	2(2) Res	2(2)
Bufflehead *Bucephala albeola*	t	2(12) Res 1(1) YR	3(13)
Ruddy Duck *Oxyura jamaicensis*	t	7(32) Res	7(32)
Common Merganser *Mergus merganser*	t	2(4) YR 1(4) Res	3(8)
Turkey Vulture *Cathartes aura*	b	1(2) BB	1(2)
Swainson's Hawk (Y) *Buteo swainsoni*	B	2(2) Gr 1(1) Res	3(3)[3]
Rough-legged Hawk *Buteo lagopus*	t	1(1) Gr	1(1)
Ferruginous Hawk (Y) *Buteo regalis*	B	2(2) Gr	2(2)
Golden Eagle (Y) *Aquila chrgsaetos*	B	1(1) CB	3(4)[3]
Bald Eagle (X,Y) *Haliaeetus leucocephalus*	t	2(3) Gr	4(6)[3]
Marsh Hawk *Circus cyaneus*	B	7(7) Gr 2(2) Res	9(9)
Prairie Falcon (Y) *Falco mexicanus*	b	1(1) BB	1(1)
American Kestrel *Falco sparverius*	b	8(11) Gr 2(2) CB 1(2) HD	11(15)

SPECIES	STATUS[1]	SIGHTINGS BY HABITAT[2]	TOTAL SIGHTINGS
Sharp-tailed Grouse *Pedioecetes phasianellus*	B	2(18) Gr 1(15) HD 1(5) Cult 1(1) XS 1(1) BB	6(40)[3]
Ring-necked Pheasant *Phasianus colchicus*	B	7(10) Gr 4(4) HD 3(3) YR 1(2) MS 1(1) Cult	16(20)
Gray partridge *Perdix perdix*	B	3(32) Gr 2(6) Cult	5(38)[3]
Sora *Porzana carolina*	b	2(2) Res	2(2)
American Coot *Fulica americana*	b	9(174) Res 3(3) YR	12(177)
Killdeer *Charadrius vociferus*	B	7(33) Res 6(8) Gr 2(2) HD 1(1) Creek	16(44)
Willet *Catoptrophorus semipalmatus*	t	1(3) YR	1(3)
Upland Sandpiper (y) *Bartramia longicauda*	b	1(2) Gr	1(2)
Least Sandpiper *Calidris minutilla*	t	1(2) Gr 1(1) Creek	2(3)
American Avocet *Recurvirostra americana*	t	1(2) YR	1(2)
Wilson's Phalarope *Steganopus tricolor*	b	1(2) Res	1(2)
Ring-billed Gull *Larus delawarensis*	t	2(4) YR 1(1) Res	3(5)
Black Tern *Chlidonias niger*	b	2(15) Res	2(15)
Mourning Dove *Zenaidura macroura*	B	25(240) Gr 5(24) Cult 5(21) HD 1(6) BB	36(291)

SPECIES	STATUS[1]	SIGHTINGS BY HABITAT[2]	TOTAL SIGHTINGS
Rock Dove *Columba livia*	b	1(2) YR	1(2)
Great Horned Owl *Bubo virginianus*	B	1(1) YR	1(1)
Short-eared Owl *Asio flammeus*	b	3(3) Gr 1(1) CB	4(4)[3]
Belted Kingfisher *Megaceryle alcyon*	B	1(1) YR	1(1)
Common Flicker *Colaptes auratus*	B	2(2) Gr 1(1) Res	3(3)
Red-headed Woodpecker *Melanerpes erythrocephalus*	B	2(3) HD	2(3)
Hairy Woodpecker *Picoides villosus*	b	1(1) Res	1(1)
Eastern Kingbird *Tyrannus tyrannus*	B	1(2) Gr 1(1) Cult 1(1) Creek	3(4)
Western Kingbird *Tyrannus verticalis*	B	3(6) Gr 1(3) Res 1(2) Homesite 1(1) HD 1(1) Cult	7(13)
Say's Phoebe *Sayornis saya*	B	5(15) Gr	5(15)
Least Flycatcher *Empidonax minimus*	b	1(1) HD	1(1)
Horned Lark *Eremophila alpestris*	B	42(678) Gr 9(57) Cult 2(2) HD	52(731)
Rough-winged Swallow *Stelgidopteryx ruficollis*	t	1(2) Gr	1(2)
Barn Swallow *Hirundo rustica*	B	8(13) Gr 2(12) Gr Cou 2(8) Creek 1(10) YR 1(6) Homesite	14(49)

SPECIES	STATUS[1]	SIGHTINGS BY HABITAT[2]	TOTAL SIGHTING
Cliff Swallow *Petrochelidon pyrhonota*	B	1(35) YR 1(8) Gr Cou 1(8) Creek	3(51)
House Wren *Troglodytes aedon*	B	2(3) HD	2(3)
Rock Wren *Salpinctes obsoletus*	b	2(2) BB 1(1) Gr	3(3)
Gray Catbird *Dumetella carolinensis*	B	1(1) MS	1(1)
Brown Thrasher *Toxostoma rufum*	b	1(2) MS 1(1) HD 1(1) BB	3(4)
Loggerhead Shrike *Lanius ludovicianus*	b	4(5) Gr	4(5)
Starling *Sturnus vulgaris*	B	2(14) HD 2(3) Gr	4(17)
Yellow Warbler *Dendroica petechia*	B	4(17) HD 1(3) MS 1(1) Creek	6(21)
Yellow-rumped Warbler *Dendroica coronata*	t	1(1) Res	1(1)
American Redstart *Setophaga ruticilla*	b	1(1) HD	1(1)
House Sparrow *Passer domesticus*	B	2(15) Homesite	2(15)
Western Meadowlark *Sturnella neglecta*	B	46(648) Gr 8(36) Cult 2(13) XS	64(697)
Yellow-headed Blackbird *Xanthocephalus xanthocephalus*	B	9(56) Res 1(6) Gr	10(62)
Red-winged Blackbird *Agelaius phoeniceus*	B	9(24) Creek 4(10) Gr 2(4) HD 1(10) YR 1(2) Gr. Cou.	17(50)

SPECIES	STATUS[1]	SIGHTINGS BY HABITAT[2]	TOTAL SIGHTINGS
Northern Oriole *Icterus galbula*	b	1(2) Creek 1(2) Gr	2(4)
Brewer's Blackbird *Euphagus cyanocephalus*	B	5(17) Gr 2(6) Res 1(6) HD	8(29)
Common Grackle *Quiscalus quiscalus*	b	1(1) HD	1(1)
Brown-headed Cowbird *Molothrus ater*	b	7(23) Gr 3(3) CB 1(2) HD 1(1) Homesite	10(29)
American Goldfinch *Carduelis tristis*	b	1(2) Gr	1(2)
Rufous-sided Towhee *Pipilo erythrophthalmus*	b	1(2) HD 1(1) MS	2(3)
Lark Bunting *Calamospiza melanocorys*	B	26(141) Gr 1(2) Cult	27(143)
Savannah sparrow *Passerculus sandwichensis*	b	2(2) Gr	2(2)
Grasshopper sparrow *Ammodramus savannarum*	b	8(13) Gr 1(1) CB	9(14)
Vesper sparrow *Pooecetes gramineus*	b	8(41) Gr 1(1) XS	9(42)
Lark Sparrow *Chondestes grammacus*	b	10(31) Gr 1(5) Res 1(3) XS 1(1) Cult	13(40)
Clay-colored sparrow (Y) *Spizella pallida*	b	1(5) Gr	1(5)
Field sparrow (Y) *Spizella pusilla*	b	1(1) Gr	1(1)
Song sparrow *Melospiza melodia*	b	1(1) Gr	1(1)

LEGEND:

X - Federal threatened or endangered species
Y - Montana "special interest or concern" species

STATUS:

B - hard evidence of breeding
b - circumstantial evidence of breeding
t - occurs, no evidence of breeding

1 Based on Montana Bird Distribution

2 Numbers are total number of sightings (total number of individuals sighted).

3 Additional observations obtained from BLM wildlife observation file.

Res - Reservoir
BB - Badlands Bluffs
CB - Creek Bottom
Gr - Grassland
MS - Mesic Shrub
XS - Sagebrush
YR - Yellowstone River

HD - Hardwood Draw
Gr Cou - Grassland Coulee
Cult - Cultivated Cropland
Creek - Creek
Homesite - Homesite

Table 7. Mammals Identified on the Study Area.

SPECIES	SIGHTINGS BY HABITAT[1]	TOTAL SIGHTING
Masked Shrew *Sorex cinerus*	1(1) XS	1(1)
Whitetail Jackrabbit *Lepus townsendi*	4(4) Gr 1(1) Gr Cou	5(5)
Desert Cottontail *Syvilagus auduboni*	1(1) XS 1(1) BB 1(1) Gr	3(3)
Thirteen-lined Ground Squirrel *Citellus tridecemlineatus*	1(1) Gr	1(1)
Northern Pocket Gopher *Thomomys talpoides*	1(1) Gr	1(1)
Beaver *Castor canadensis*	2(2) YR	2(2)
Western Harvest Mouse *Reithrodontomys megalotis*	2(2) XS	2(2)
Deer Mouse *Peromyscus maniculatus*	163(163) BB 81(81) XS 56(56) Res 41(41) Gr	341(341)
Meadow Vole *Microtus pennsylvanicus*	6(6) Res 5(5) XS	11(11)
Prairie Vole *Microtus ochrogaster*	24(24) Res 4(4) XS 4(4) Gr 1(1) BB	33(33)
Bushytail Woodrat *Neotoma cinerea*	1(1) BB	1(1)
Muskrat *Ondatra zibethica*	2(2) Res	2(2)
House Mouse *Mus musculus*	1(1) Res	1(1)

SPECIES	SIGHTINGS BY HABITAT[1]	TOTAL SIGHTINGS
Coyote *Canis latrans*	3(3) Gr 1(1) XS 1(1) Cult	5(5)
Red Fox *Vulpes fulva*	1(1) Res	1(1)
Racoon *Procyon lotor*	1(1) Res	1(1)
Whitetail Deer *Odocoileus virginianus*	1(2) CB	1(2)
Mule Deer *Odocoileus hemionus*	3(29) Gr 3(12) CB 1(2) HD 1(1) Res	8(42)[2]
Pronghorn *Antilocapra americana*	14(195) Gr 1(14) Cult	15(209)[2]

1. Sightings are total number of sightings (total number of individuals sighted).

2. Additional observations obtained from BLM wildlife observation file.

Res - Reservoir
BB - Badlands Bluff
CB - Creek Bottom
Gr - Grassland
XS - Sagebrush
YR - Yellowstone River
HD - Hardwood Draw
Gr Cou - Grassland Coulee
Cult - Cultivated Cropland

most of the remaining mammals were small mammals that were trapped. Likewise, habitat utilization was merely a listing of the habitats that the species were observed in.

A total of 4,000 trap nights or 1,000 trap nights for each of the four vegetative types were completed during the study. Each vegetative type was trapped for 300 trap nights in the spring and fall season and 400 trap nights for the summer season. There were 402 captures overall which resulted in a 10.05 capture/100 trap nights efficiency. Seven species of small mammals, five species of birds, and two species of amphibians were captured (Table 8). Deer mice and prairie voles were the most abundant species.

Diversity indices were tabulated for the small mammals that were trapped from the four vegetation types (Table 9). The grassland was the least productive area for number of species (2) and total individuals (45). The badlands bluffs were the most productive area for total individuals (165), but only three species were represented. Also, 163 of the 165 individuals were deer mice. The probable reason for this is the badlands bluffs have very little surface vegetation which precludes many species. Four species and 87 individuals were trapped around the reservoir and five species and 93 individuals were trapped around the sagebrush.

From these figures, it would indicate that overall the sagebrush was the more productive community for species and individuals; however, these two indices are insensitive to the distribution of individuals among species

Table 8. Comparison of Small Mammal Densities in Four Vegetation Types.[a]

SPECIES	UPLAND GRASSLAND	SAGEBRUSH FLATS	RESERVOIR	BADLANDS BLUFF	TOTAL
Deer Mouse	41	81	56	163	341
Bushy-Tailed Woodrat				1	1
Prairie Vole	4	4	24	1	33
Meadow Vole		5	6		11
Harvest Mouse		2			2
Masked Shrew		1			1
House Mouse			1		1
Amphibians			4	1	5
Bird	1		4[b]	2[c]	7
TOTAL	46	93	95	168	402

a. Sample size was 1000 trap nights for each vegetation type.
b. Four individuals but two species.
c. Two individuals but two species.

in a community (Cox, 1972). Therefore, Simpson's and Shannon-Weiner indices of diversity were used to measure the species diversity, or richness. Both measurements showed the lowest diversity in the badlands bluffs. This was followed by the grassland, sagebrush, and then the reservoir, in increasing diversity. Evenness (the apportionment of individuals among the species) values showed the same, except grassland and sagebrush were reversed. Probable causes are the low values of the species (2) and individuals (45) for the grassland. In this instance, the diversity indices are the better indicators of community stability because of the small sample size.

Table 9. Diversity Indices for the Four Vegetation Types.[1, 2]

	Number of Species	Number of Individuals	Simpson's Index	Shannon-Weiner Index	Evenness
Grassland	2	45	1.199	0.432	0.623
Sagebrush	5	93	1.314	0.784	0.487
Bluffs	3	165	1.025	0.106	0.096
Reservoir	4	87	2.043	1.266	0.913

1. Based on small mammal trap data.
2. The higher the number value for the indexes, the better the diversity and evenness.

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Appendix Table A. Preseason Mule Deer Fawn Production by Hunting District (15 Sept-31 Oct 1978) [Source: Montana Fish, Wildlife, and Parks Big Game Surveys and Inventory - Region 7 - 1979].

Hunt Dist	Bucks	Does	Fawns	Total	Fawns/ 100 Does	Fawns/ 100 Adults	Percent Fawns
730	6	28	23	57	82	68	40[a]
731	2	7	5	14			
760[b]	8	47	47	102	100	85	46
761	1	12	10	23			
TOTAL	17	94	85	196	90	76	43

a. Incorrect value corrected from original table.

b. Data obtained from Jon Swenson, personal communication, Dec. 1979 and Fawns/100 Does, etcetera worked out from this.

Appendix Table B. Postseason Mule Deer Fawn: Adult Ratios (December 1978-1979) [Source: Montana Fish, Wildlife, and Parks Big Game Surveys and Inventory - Region 7 - 1979].

Hunt Dist	Adults	Fawns	Total	Fawns/ 100 Adults	Percent Fawns
730	174	137	311	79	44
731[a,b]	987	788	1,775	80	44
731[c]	200	144	344	72	42
TOTAL	1361	1069	2430	79	44

a. January 1979.

b. Some data from K. Hamlin.

c. March 1979.

Appendix Table C. Deer Classifications on Hamlin's Study Area during Fall and Winter 1975 and Spring 1976.
Source: Montana Fish, Wildlife, and Parks Job Progress Report - 1976

	Species	Total Animals	Total Males	Yrls. Males	Females	Adults	Fawns	Uncl.	Fawns/ 100 Adults	Fawns/ 100 Females
Preseason ground & aerial										
	WTD	76	13	-	28	41	32	3	78	114
South area	MD	125	25	-	54	79	31	15	39	57
	WTD	43	8	-	14	22	18	3	80	129
North area	MD	49	3	-	31	33	16	-	49	52
	WTD	119	21	-	42	63	50	6	78	119
Entire area	MD	174	28	-	85	113	47	15	42	55
December aerial										
	WTD	83	10	7	34	44	26	12	59	76
South area	MD	117	9	7	71	80	37	-	46	52
	WTD	146	19	9	68	86	53	7	62	78
North area	MD	35	3	2	22	25	11	-	44	50
	WTD	229	29	16	102	130	79	19	61	78
Entire area	MD	153	12	9	93	105	48	-	46	52
April aerial										
	WTD	87	-	-	-	46	36	5	78	-
	MD	108	-	-	-	74	34	-	46	-
	WTD	146	-	-	-	84	62	-	73	-
North area	MD	26	-	-	-	12	9	5	75	-
	WTD	233	-	-	-	130	98	5	75	-
Entire area	MD	134	-	-	-	86	43	5	50	-

Appendix Table D. Deer Classifications on Hamlin's Study Area During Fall 1976 and During Winter and Spring 1977.
Source: Montana Fish, Wildlife, and Parks Job Progress Report - 1977

	Species	Total Animals	Total Males	Yrls. Males	Females	Adults	Fawns	Uncl.	Fawns/ 100 Adults	Fawns/ 100 Females
September aerial										
South area	WTD	25	3	2	13	16	7	2	44	54
	MD	101	17	9	45	62	32	7	52	71
North area	WTD	49	17	5	19	36	11	2	31	58
	MD	24	7	5	10	17	7	-	41	70
Entire area	WTD	74	20	7	32	42	18	4	43	56
	MD	125	24	14	55	79	39	7	49	71
January aerial										
South area	WTD	77	8	4	28	36	18	23	50	64
	MD	210	34	17	103	137	57	16	42	55
North area	WTD	83	-	-	-	27	25	31	93	-
	MD	42	6	3	21	27	15	-	56	71
Entire area	WTD	160	-	-	-	63	43	54	68	-
	MD	252	40	20	124	164	72	16	44	58
March aerial										
South area	WTD	44	-	-	-	25	19	-	76	-
	MD	154	-	-	-	103	51	-	50	-
North area	WTD	42	-	-	-	28	14	-	50	-
	MD	13	-	-	-	7	6	-	86	-
Entire area	WTD	86	-	-	-	53	33	-	62	-
	MD	167	-	-	-	110	57	-	52	-

Appendix Table E. Deer Classifications on Hamlin's Study Area During Fall 1977 and During Winter and Spring 1978.
Source: Montana Fish, Wildlife, and Parks Job Progress Report - 1978

	Species	Animals	Total Males	Yrls. Males	Females	Adults	Fawns	Uncl.	Fawns/ 100 Adults	Fawns/ 100 Females
October										
South area	WTD	69	17	8	30	47	19	3	40	63
	MD	195	43	15	85	128	66	1	52	78
North area	WTD	19	3	1	7	10	9	-	90	129
	MD	78	8	5	34	42	35	-	83	103
Entire area	WTD	88	20	9	37	57	28	3	49	76
	MD	272	51	20	119	170	101	1	59	85
January										
South area	WTD	56	1	1	32	33	23	-	70	72
	MD	334	49	25	165	214	119	1	56	72
North area	WTD	243	16	7	123	139	104	-	75	85
	MD	79	8	7	38	46	33	-	72	87
Entire area	WTD	299	17	8	155	172	127	-	74	82
	MD	413	57	32	203	260	152	1	58	75
March										
South area	WTD	17	-	-	-	12	5	-	42	-
	MD	271	-	-	-	184	78	9	42	-
North area	WTD	102	-	-	-	35	35	23	66	-
	MD	48	-	-	-	30	18	-	60	-
Entire area	WTD	119	-	-	-	47	28	44	60	-
	MD	319	-	-	-	214	96	9	45	-

Appendix Table F. Population Estimates for Mule Deer on Hamlin's Study Area.
Source: Montana Fish, Wildlife, and Parks Job Progress Report - 1976, 1977, 1978.

	TOTAL	ADULTS	FAWNS	ADULT FEMALES	ADULT MALES
Observed					
Winter 75-76	153	105	48	93	12
+ 15% missed	180	124	56	109	15
Calculated June 1976	180	180	--	+ 28 137 x .58 79 ff	28 43 -- 58 Fawns/100 Adult Females observed, winter 1976-77.
Calculated Winter 76-77	259	180	79	137	43
Observed Winter 76-77	252	175	77	132	43
Calculated June 1977	260	260	--	178 x .75 134 ff	82 -- 75 Fawns/100 Adult Females observed, winter 1977-78.
Calculated Winter 77-78	394	260	134	178	82
Observed Winter 1977-78	413	261	152	204	57

Appendix Table G. Harvest Statistics of Mule Deer and White-tailed Deer Hunters in Region 7 - 1978 (Source: Montana Fish, Wildlife, and Parks Big Game Survey and Inventory - Region 7 - 1979).

Hunt Dist	Resident Hunters	Non-Resident Hunters	Total Hunters	Total Hunter Days	Total Harvest	Percent Success
			Mule Deer			
730	359	51	410	1,410	196	48
731	404	90	494	855	311	63
760	310	35	345	1,119	137	40
761	458	7	465[a]	1,615	219	47[a]
TOTAL	1,531	183	1,714	4,999	863	50
			White-tailed Deer			
730	108	8	116	265	49	42
731	689	39	728	1969	462	63
760	94	4	98	194	38	39
761	404	16	420	1,043	204	49
TOTAL	1295	67	1362	3,471	753	55
			Total			
730	575	59	634	1,478	265	42
731	1,310	145	1,455	3,807	850	58
760	488	43	531	1,645	194	37
761	1,020	63	1,083	3,247	457	42
TOTAL	3,393	310	3,703	10,177	1766	48

Appendix Table H. Habitat Use by Mule Deer on Hamlin's Study Area Recorded as a Percentage of All Mule Deer Observed.
Source: Montana Fish, Wildlife, and Parks Job Progress Report - 1977.

Habitat type-Cover type	Sept.-Oct.	Dec.-Jan.	Mar.-April
Silver Sage - Grassland	-	-	1
Grassland	3	tr.[1]	37
Horizontal Juniper - Grass	-	16	8
Rough Breaks	9	71	28
Green Ash	29	5	1
Sage-Snowberry-Rose	30	-	13
Deciduous Shrub	29	8	12
Agriculture	-	-	-
Total Deer	363	592	610

[1]tr. = less than 0.5% of observations.

Appendix Table I. Habitat Use by White-Tailed Deer on Hamlin's Study Area as a Percentage of All White-Tailed Deer Observed.
Source: Montana Fish, Wildlife, and Parks Job Progress Report - 1977.

Habitat Type-Cover Type	Sept.-Oct.	Dec.-Jan.	Mar.-April
Silver Sage-Grassland	7	-	-
Grassland	-	12	12
Horizontal Juniper - Grass	-	24	6
Rough Breaks	3	12	-
Green Ash	31	12	16
Sage-Snowberry-Rose	10	tr.	1
Deciduous Shrub	49	8	35
Agriculture	-	31	29
Total Deer	109	311	353

Appendix Table J. Browse Use During 1975-76 and 1976-77 for Hamlin's Study Area.
Source: Montana Fish, Wildlife, and Parks Job Progress Report - 1977.

Trans. No.	Year	Number of new Pellet Groups	Chrysothamnus nauseosus Number of Plants	Chrysothamnus nauseosus Percent leaders used	Artemisia cana Number of Plants	Artemisia cana Percent leaders used	Rhus trilobata Number of Plants	Rhus trilobata Percent leaders used	Prunus virginiana Number of Plants	Prunus virginiana Percent leaders used	Symphorocarpos spp. Number of Plants	Symphorocarpos spp. Percent leaders used	Rosa spp. Number of Plants	Rosa spp. Percent leaders used	Artemisia tridentata Number of Plants	Artemisia tridentata Percent leaders used
333	1976	104	104	68.4	89	12.3	78	2.7	34	1.6	-	-	-	-	61	2.1
	1977	152	139	86.7	62	25.7	53	8.8	50	17.4	-	-	-	-	52	6.1
345	1976	19	105	18.9	45	6.5	21	1.7	-	-	-	-	-	-	-	-
	1977	48	156	34.4	50	3.2	22	0.5	-	-	-	-	-	-	-	-
400	1976	37	76	55.7	-	-	-	-	-	-	-	-	-	-	-	-
	1977	53	97	85.0	-	-	-	-	-	-	-	-	-	-	-	-
444	1976	25	111	33.7	48	4.0	33	2.1	29	2.2	-	-	-	-	-	-
	1977	120	141	79.5	51	11.2	39	1.8	38	39.9	-	-	-	-	-	-
454	1976	11	62	44.2	-	-	65	0.9	-	-	-	-	-	-	-	-
	1977	22	78	71.6	-	-	69	0.4	-	-	-	-	-	-	-	-
456	1976	52	88	45.2	113	8.9	52	4.3	31	19.8	-	-	-	-	-	-
	1977	139	122	79.1	115	13.8	63	4.0	43	30.6	-	-	-	-	-	-
All MD Areas	1976	248	546	43.6	295	8.6	256	2.7	94	7.8	-	-	-	-	61	2.1
	1977	534	733	71.1	278	14.0	246	3.3	131	28.2	-	-	-	-	52	6.1
399	1976	83	-	-	-	-	-	-	30	35.7	107	40.8	102	22.2	-	-
	1977	53	-	-	-	-	-	-	39	49.9	106	49.4	74	19.2	-	-
499	1976	22	-	-	-	-	-	-	103	23.4	44	8.6	-	-	-	-
	1977	29	-	-	-	-	-	-	102	37.3	89	6.3	-	-	-	-
All WTD Areas	1976	105	-	-	-	-	-	-	133	26.2	151	29.6	102	22.2	-	-
	1977	82	-	-	-	-	-	-	141	40.8	195	29.7	74	19.2	-	-

Appendix Table K. Preseason White-tailed Deer Fawn Production (15 Sept-31 Oct 1978) [Source: Montana Fish, Wildlife, and Parks Big Game Surveys and Inventory - Region 7-1979].

Hunt Dist	Bucks	Does	Fawns	Total	Fawns/ 100 Does	Fawns/ 100 Adults	Percent Fawns
731	1	12	17	30			
761		1	2				

Appendix Table L. Postseason White-tailed Deer Fawn: Adult Ratios (Dec. 1978 - March 1979) [Source: Montana Fish, Wildlife, and Parks Big Game Surveys and Inventory - Region 7-1979].

Hunt Dist	Adults	Fawns	Total	Fawns/ 100 Adults	Percent Fawns
730	82	17	45		
731	311	237	548	76	43
731[a]	73	45	118	62	38
TOTAL	466	299	711	64	42

a January 1979
b March 1979, some data from K. Hamlin

Appendix Table M. Antelope Population Statistics for Hunting Districts in Prairie Planning Unit.

Source: Montana Fish, Wildlife and Parks Big Game Surveys and Inventory - Region 7 - 1979.

Hunt Dist	Square Miles	Year	Bucks	Does	Fawns	Total	Density	Fawns/ 100 Females	Males/ 100 Females	Fawns/ 100 Adults
714[a]	1,274	1964	168	195	177	546	0.6	91	86	27
		1967	116	245	235	596	0.8	96	47	65
		1970	159	232	244	635	0.7	105	69	62
		1972	244	511	497	1,252	1.0	87	53	57
		1973	258	592	548	1,398	1.1	91	47	62
		1975	306	588	512	1,406	1.1	92	60	57
		1978	301	475	986	1,162	0.9	81	63	50
731	1,056	1964	489	830	781	2,117	2.0	94	59	59
		1967	254	440	422	1,117	1.1	96	58	61
		1970	355	682	689	1,726	1.6	101	52	66
		1972	222	509	527	1,258	1.2	104	44	72
		1973	241	510	464	1,215	1.1	91	47	62
		1975	248	554	449	1,251	1.2	81	45	62
		1978	161	423	268	852	0.8	63	38	46
760	816	1962	170	322	315	836	1.0	98	53	64
		1965	100	214	157	492	0.6	73	47	50
		1968	80	216	165	461	0.5	76	37	56
		1971	75	248	220	543	0.7	89	30	68
		1973	95	257	235	587	0.7	91	37	67
		1975	142	277	148	567	0.7	53	51	35

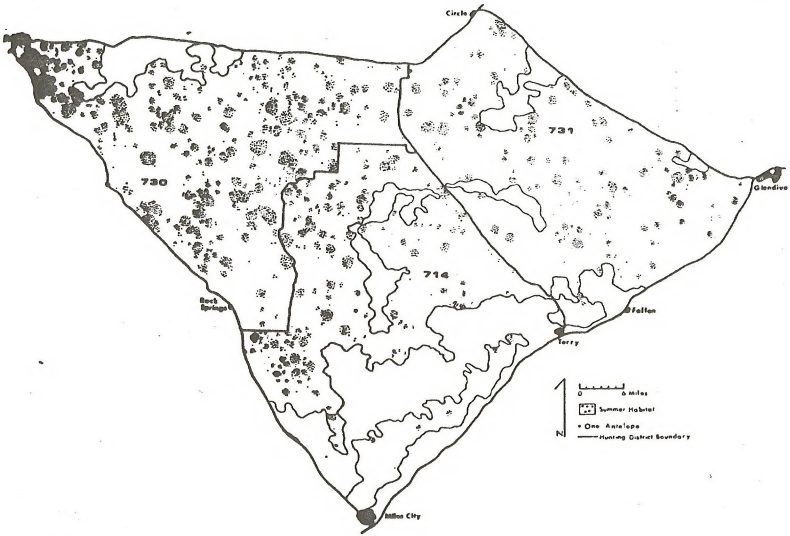
a. Data for the years 1964-1979 represent hunting district 714 prior to the 1972 boundary change when it included 883 square miles.

Appendix Table M. (cont.)

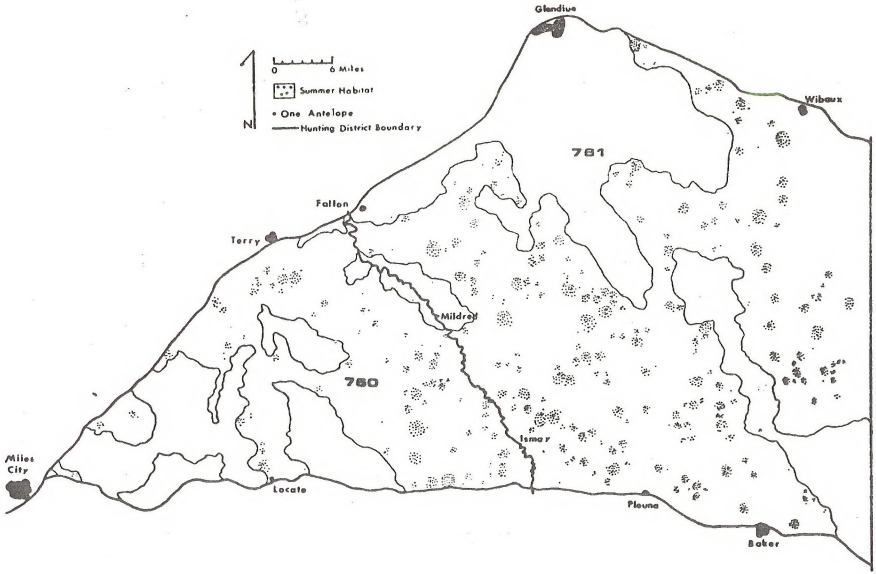
Hunt Dist	Square Miles	Year	Bucks	Does	Fawns	Total	Density	Fawns/ 100 Females	Males/ 100 Females	Fawns/ 100 Adults
761	1,922	1962	595	964	817	2,442	1.3	85	62	52
		1965	222	396	294	944	0.5	74	56	48
		1968	282	507	558	1,359	0.7	110	56	71
		1971	450	770	717	1,937	1.0	93	58	59
		1973	354	809	742	1,905	1.0	92	44	64
		1975	372	893	646	1,911	1.0	72	42	51

Appendix Table N. Antelope License, Hunter, and Harvest Statistics, 1978
Source: Montana Fish, Wildlife, and Parks Big Game Surveys and Inventory - Region 7 - 1979

Hunt Dist	License Quota	License Total	Resident	Non-Resident	Total Hunters	Total Harvest	% Sucess	# and % Bucks	# and % Does	# and % Others
714	300	297	269	28	250	185	74	140-75%	45-25%	Ø
731	200	200	183	17	174	91	52	70-76%	18-20%	4-4%
760	200	200	176	24	159	102	70	71-70%	21-21%	10-10%
761	900	897	784	113	696	484	70	225-53%	216-45%	13-3%



Appendix Fig. O Hunting districts 714, 730 and 731 showing antelope distribution as determined from July 1975 complete coverage surveys. Source: Montana Fish, Wildlife, and Parks Big Game Surveys and Inventory - Retion 7 - 1977



Appendix Fig. P Hunting districts 760 and 761 showing antelope distribution as determined from July 1975 complete coverage surveys. Source: Montana Fish, Wildlife, and Parks Big Game Surveys and Inventory - Region 7 - 1977

Appendix Table Q. Area Occupied by Antelope in Hunting Districts 714, 731, 760, and 761 Based on Antelope Distribution and the Occurrence of Rough Breaks and Intensively Irrigated Agricultural Lands

Source: Montana Fish Wildlife and Parks Big Game Surveys and Inventory Region 7 - 1979)

Hunting District	Survey Year	No. of Antelope	Hunting Dist Size in sq miles	Area Occupied Sq Mi	Area Occupied Percent
714	1975	737	883	450	51
731	1975	1251	1056	950	90
760	1975	567	816	522	64
761	1975	1,911	1,922	1,282	67

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